Rapid Response Strategy
For Development of Control Plans

Much of Utah's AIS Management Plan is focused upon preventing new AIS from arriving and becoming established. However, another important function of this plan is a strategy for a coordinated control plan as a rapid response to findings of newly imported AIS or to the spread of already established AIS. In the past, individual agencies worked virtually alone trying to intercept AIS. Heretofore findings of new or spreading invasions of AIS in Utah were often dependent upon chance, and more often than not, reported by an observant public. In the future, most findings of new or spreading AIS are anticipated to be a result of well executed searches, followed by a well planned, timely and coordinated control plan as a rapid response to contain or control new or spreading AIS.

The Utah Aquatic Invasive Species Act, codified as Chapter 27 of Section 23 in the Utah Code and Rule R657-60 provides authority to Utah Division of Wildlife Resources in the event of a water body being affected by a *Dreissena* species in part as follows:

1. To close ingress and/or egress at a water body, facility or water supply system to terrestrial or aquatic vehicles and equipment capable of moving *Dreissena* species for protection of Utah from their spread; and
2. To maintain the closure until an acceptable control plan for containment and/or control of the *Dreissena* species is developed and implemented by the water body operator.

Thus, water body operators in Utah are being strongly encouraged to develop individual control plans prior to the need for rapidly addressing containment and/or control of *Dreissena* species or other AIS in the event of an unfortunate infestation. Pre-infestation assessments for vulnerability and control plans can be developed at a more leisurely pace as compared to rapidly responding to the new find of an AIS infestation.

It is not the intent of this rapid response strategy to limit a water body operator's individual processes for identifying vulnerability to an AIS infestation, or creativity in the development and implementation of a suitable plan for containment and/or control of the AIS. Rather, it is a guide comprised of logically ordered objectives about how a multi-based group of agencies and interested parties, including the water body operator and the Utah Division of Wildlife Resources, acting as a team could either become prepared prior to infestation by AIS or to rapidly respond upon detection. It is important to recognize that Utah Division of Wildlife Resources as per Rule R657-60-8 and R657-60-9 has approval authority for control plans dealing with *Dreissenid* mussels.

The following protocols, which are objectives of the rapid response strategy, outline a reasonable response process; they were adapted in-part from Idaho's 2007 Aquatic Nuisance Species Plan and modified to suit Utah's needs and purposes. Additionally, The Environmental Protection Agency document, *Overview of EPA Authorities for Natural Resource Managers Developing Aquatic Invasive Species Rapid Response and*

Management Plans, is a good reference and can be secured at: http://www.epa.gov/owow/invasive_species/invasives_management/.

Protocols for a Control Plan as a Rapid Response Strategy

• Immediately verify a reported AIS detection
• Upon verification for the presence of an AIS, immediately notify relevant local natural resource managers, pulling their technical personnel together as a "response team," and notify Utah's AIS Task Force
• The response team must immediately begin surveys to define the extent of an AIS infestation
• As the extent of infestation is being determined, set-up an appropriate command structure to guide continuing response team activities for determining and implementing containment and/or control methods for the AIS infestation
• Establish internal and external communication systems
• Organize available resources (personnel, equipment, funds, etc.), including compliance with laws and permitting requirements
• Prevent further spread using quarantine and pathway management
• Apply available, relevant and legally defendable eradication, control and/or containment actions and implement mitigation
• Institute long-term monitoring
• Evaluate response effectiveness, modify the Rapid Response Strategy as needed, and pursue long-term funding for AIS management

Control Plan Objective 1: Immediately verify a reported AIS detection.

Strategy: Any person or agency that receives or accepts responsibility for handling the initial report for the presence of an AIS must immediately contact Utah Division of Wildlife Resources for assistance to begin appropriate processes to confirm a report's validity and to cause implementation of the rapid response strategy.

Note: In regards to Dreissena mussels, this strategy is required by law (R657-60).

Task 1: Immediately interview the reporter(s), which may be anyone from the public, or a microscopy lab, and/or a lab that conducts deoxyribonucleic acid polymerase chain reaction tests (PCR) on plankton or tissue samples received from a Utah Aquatic Invasive Species Task Force partner agency, to begin validation of the alleged AIS detection.

• A microscopy report from a lab, based upon morphological or histological characters of a suspect specimen living in nature, is considered as preliminary for the presence of *Dreissena*. Such a report must only be provided to Utah Division of Wildlife Resources' AIS Coordinator.
• Following a microscopy report, Utah Division of Wildlife Resources' AIS Coordinator will request that the microscopy lab forward a portion of the original sample for two different and independent molecular deoxyribonucleic acid polymerase chain reaction tests (PCR) for confirmatory assessment regarding the presence of *Dreissena*. Again, reports for findings from PCR labs must only be provided to Utah Division of Wildlife Resources' AIS Coordinator.

Note: Security regarding any lab report results from a need to control release of the information, minimizing speculation by the media, public and others about

environmental or economic impacts, and eventual containment and control methods prior to full assessment of the finding. Additionally, action by the Utah Wildlife Board is required in order to list any water in Rule R657-60 as infested with a *Dreissena* species. Similarly, Utah Division of Wildlife Resources' Director has authority under Rule R657-60 to affect development and approval of a control plan for specified waters or to implement closure of a water body.

• Record details of the AIS find location, such as GPS delineation, name of the water body or stream length number, prominent landmarks, highway mile marker, or other information about where the suspect species was found.

• Collect pertinent contact information for the reporter(s)--name, address, telephone (home, work and cellular), and email.

• Secure an estimate of the number of individuals or colonies, density and extent (e.g. acreage or linear miles of stream) for infestation of the species found.

• Document the date and time of sighting(s).

• Note other relevant site conditions (access limitations, etc.)

Task 2: When Utah Division of Wildlife Resources' AIS Coordinator first receives notification from either a microscopy lab or a PCR lab regarding a *Dreissena* finding, the AIS Coordinator will immediately contact the Director's office at Utah Division of Wildlife Resources' and the Fishery Chief. This group will immediately meet to make a decision about release of the information to appropriate partners (water body operators and the Utah AIS Task Force). Any release of information by the AIS Coordinator to partner groups must consider need and value for a coordinated release of information to the media. And, media advisories will be orchestrated and coordinated amongst the water body operators and the Utah AIS Task Force by Utah Division of Wildlife Resources' Outreach Chief.

Task 3: Validate AIS identification as soon as possible via a physical sample as follows:

• Obtain a digital or other photograph (with scale indicator), if possible.

• Secure and preserve dead samples of the species, if possible, for confirmation.

• Arrange an immediate site visit, when feasible, by a team of recognized experts.

• If recognized experts cannot feasibly reach the site within 24 hours, arrange to ship samples and other evidence (e.g., photographs) via Express Mail Service. In the case of photographs, use a digital camera or scan (digitize) 35 mm or printed photos and email them to the experts.

Note: Prior to shipping samples, obtain guidance from recognized experts, seeking existing protocols regarding handling of the sample (e.g. desired quantity, where and how to collect and deliver the sample, preservatives, refrigeration, etc.).

Control Plan Objective 2: Upon verification for the presence of an AIS, and with concurrence of Utah Division of Wildlife Resources' Director, immediately notify relevant natural resource managers (local natural resource managers, Utah's AIS Task Force, and AIS Coordinators in adjoining states), pulling appropriate technical personnel together as a "response team."

Strategy: The agency that receives or accepts responsibility for handling the initial report for the presence of an AIS upon verification for the presence of an AIS, must immediately ensure that all parties having local jurisdiction and interest in response decisions or having technical support capabilities are quickly engaged as a "response team" as follows:

Note[1]: The "response team" at a minimum should be comprised of technical personnel from Utah Division of Wildlife Resources (AIS biologist); water body operator interests (local irrigation company's water master, water conservancy district and/or Bureau of Reclamation); local land management authority (private owners, Utah State Parks and Recreation, U.S Forest Service, and/or Bureau of Land Management). Possibly, other personnel may be needed, depending on the complexity for dealing with the initial AIS finding, so the response team will determine need and secure additional expertise. Local irrigation companies and some water conservancy districts may elect to have a consultant firm's representative participate on their behalf or with them. Utah's AIS Task Force will serve as consultant and mentor for the "response team."

Note[2]: In the case of an interdiction where rapid response by a professionally trained responder results in complete destruction of the AIS (e.g. apprehension for unlawful transport of a live AIS); and when possible, a successful decontamination of the introduction vector (e.g. boat or equipment) ensues, file pertinent reports notifying the response team and the Utah AIS Task Force. No further coordination is needed.

Note[3]: Routine day-to-day operations for interdictions of boaters at water bodies and resultant decontaminations do not require notification of the "response team," although summary reports for seasonal activity must be prepared, filed and shared with the team and Utah's AIS Task Force.

Task 1: Within the first 24 hours or as soon as practical after a physical sample is visually confirmed to be an AIS by a recognized expert, notify Utah Division of Wildlife Resources (in the case of a *Dreissena* species this notification is required by Rule R657-60-4); notify and pull together a local "response team" of technical personnel; involve other relevant natural resource managers and interested publics to participate as determined by the team; advise Utah's AIS Task Force of the determination and planned future action.

Note: A local notification list must be maintained by Utah Division of Wildlife Resources' five regional AIS biologists and be updated at least twice annually. Utah Division of Wildlife Resources' AIS coordinator in Salt Lake City must be notified about any AIS finds; he will immediately notify the Utah AIS Task Force.

Task 2: Within the first 24 hours or as soon as practical inform any other interested parties (e.g. elected officials; organized, local recreational user groups; media via the Outreach Section as determined necessary by Utah Division of Wildlife Resources Director; etc.).

Task 3: Make verification of notifications to confirm that parties on the contact list, did in fact, receive notification (e.g., use Internet list server response confirmation or phone call-backs).

Control Plan Objective 3: The response team must immediately begin surveys to define the extent of an AIS infestation.

Strategy: The response team must rapidly determine the extent of colonization for the newly discovered AIS to guide subsequent management decisions regarding containment and/or control.

Task 1: Identify within the response team a lead monitoring coordinator, determine accepted survey methods, and pool resources to maximize the effectiveness of survey efforts.

Task 2: The response team must immediately survey water bodies to determine the geographic extent and population demographics of an AIS infestation. Include upstream and downstream areas, connected water bodies, and nearby water bodies having potential vulnerability to the original or latent contamination pathways.

Task 3: Immediately identify and make arrangements to survey any potential facilities (e.g., hydropower, fish hatcheries, irrigation systems, etc.) that could be impacted by the AIS, advising their operators of the predicament and invite them to become engaged as cooperators with the "response team."

Task 4: Ensure that surveys are completed as soon as possible and that results are reported to the entire "response team," other interested parties, and the Utah AIS Task Force.

Control Plan Objective 4: As the extent of infestation is being determined, set-up an appropriate command structure to guide continuing response team activities for determining and implementing containment and/or control methods for the AIS infestation.

Strategy: As the extent of AIS infestation is becoming known, supervisory leadership for the response team members needs to immediately meet, making assignment amongst their staffs for a continuing response and commitments for other needed resources. Continuing efforts to contain and/or control the AIS infestation could occur under the framework of the National Incident Management System or any other mutually agreed upon personnel management scenario to facilitate command and decision-making processes. Nonetheless, concurrence amongst the supervision for the response team members must be achieved about how to proceed in order to expedite conduct of work, avoid duplication of effort, facilitate public outreach and information sharing between agencies, minimize authority conflicts, while preserving flexibility for adaptive management.

Task 1: Supervisory leadership for the response team members must achieve concurrence for appointment of an incident commander to lead the response team in developing and implementing an AIS containment and/or control plan.

Note[1]: Where multiple agencies have shared jurisdiction over a water body (e.g. Bureau of Reclamation water management operations and U.S. Forest Service recreational and land management operations), a unified command structure with co-lead incident commanders may be used.

Note[2]: Likely an incident commander will originate from a state or federal natural resource management agency having jurisdiction over the infested water and surrounding recreation area. An incident commander should currently hold a

leadership position allowing for the necessary time commitment and experience to lead a multi-agency response team.

Note[3]: The incident commander will be the voice to represent the response team, and will direct and coordinate development and implementation of a rapid response to contain and/or control an AIS infestation.

Note[4]: In the event there is no initial consensus on the incident command role, this role will default to the UDWR statewide AIS Coordinator and/or the appropriate U.S. Fish and Wildlife Service Regional AIS Coordinator until the relevant water body/recreation area operation authorities achieve concurrence on incident command.

Task 2: The incident commander shall convene a meeting involving the response team and conduct the following:

• Facilitate a decision-making process that uses consensus building and recognizes existing, cascading levels of authority within individual agencies, along with existing cooperative agreements;

• Establish organizational assignments within the response team as needed (e.g. outreach, budget & inventory control, etc.), including an assessment of need for additional representation on the response team by local, tribal, state, federal governments entities, including non-governmental organizations;

• Establish process for response team notifications, schedule of necessary meetings and a priority of activity, including realistic timelines/deadlines;

Task 3: The incident commander should develop a technical advisory team that includes experts from outside the local area to provide advice about planned response team activities and priorities.

Note: Distal members or others on technical advisory team do not necessarily have to assemble onsite, but can provide guidance to the incident commander and the response team via telephone conference calls involving the entire technical advisory team.

Control Plan Objective 5: Establish internal and external communication systems.

Strategy: The Incident Commander and the response team must develop an information dissemination process to ensure consistent and effective communication to interested internal and external stakeholders, including the media and public.

Task 1: Notify and educate affected landowners, and where appropriate, gain their written permission to access property for response team activities.

Task 2: Notify and educate potentially affected water users and water-rights holders.

Task 3: Develop a public information strategy, press packets, press release processes, and press conferences.

Task 4: Develop and implement general public education and outreach.

Note[1]: Since there are a variety of AIS educational materials used between regions and states, assure coordination during a multi-state infestation, and perhaps agreement on materials to be used.

Note[2]: Regarding tasks 3 & 4, assistance from a professional outreach staff member from one of the response team agency's should be sought, since they

have expertise and previously established liaison with local and statewide media resources and personalities.

Control Plan Objective 6: Organize available resources (personnel, equipment, funds, etc.), including compliance with laws and permitting requirements.

Strategy: The Incident Commander and the response team must identify and secure sufficient resources to affect AIS eradication, control and/or containment actions, including recognition for need to comply with a broad array of local, state and federal laws and permitting processes.

Task 1: Develop estimates and identify potential sources for the response team's needs regarding staff, facilities, equipment and funds.

Task 2: Secure commitment from the response team's home agencies and others for needed staff, facilities, equipment and funds.

Task 3: Ensure mechanism for dispersal of funds is in place, and when the funds are needed, that the flow of dollars occurs expeditiously, including inventory control for acquired equipment.

Task 4: Arrange for the response team to be briefed about the array of local, state and federal laws that pertain to the activities in which they may engage to achieve AIS eradication, control and/or containment (e.g. National Environmental Policy Act considerations regarding need for environmental statements, assessments and prior approved actions recognized as categorical exclusions, including need for associated mitigation; Endangered Species Act consultations and compliance; etc.).

Task 5: Arrange for the response team to be briefed about the array of local, state and federal permits that may be needed to conduct the activities in which they may engage to achieve AIS eradication, control and/or containment (e.g. pesticide applicator permit; National Pollutant Discharge Elimination System permits administered by the Environmental Protection Agency and the Utah Department of Environmental Quality; etc.).

• Consider any applicable emergency provisions associated with permits (e.g. Federal Insecticide, Fungicide and Rodenticide Act, Federal Crisis Exemption--40 C.F.R. PART 166--can be secured if the known or accepted methods of eradication are not currently permitted);

• Keep in mind that state and national permits under some programs already exist (e.g. state stream alteration permits administered by Utah Division of Water Rights, section 404 Clean Water Act dredge and fill permits administered by the Army Corps of Engineers; etc.) and

• Assess modifying existing agency permits for needed purposes as opposed to securing a new permit

Task 6: If reasonable and necessary, pursue declarations of emergency by elected officials.

Control Plan Objective 7: Prevent Further Spread Using Quarantine and Pathway Management.

Strategy: The Incident Commander and the response team in coordination with agencies having regulatory authority must minimize all vectors and pathways that might further spread the original infestation.

Task 1: Evaluate risks for dispersal vectors and pathways for further spreading the AIS, including movement by human activity, construction, water-haul and recreational equipment, movement by fish and wildlife, movement via water flow, and other physical processes.

Task 2: Restrict dispersal vectors and pathways, where feasible, including the following or similar measures that are suitable for individual species:

• Under authority of Rule R657-60-8, consider closure of infested water bodies, facilities, or water supplies, as needed, to prevent spread of *Dreissenid* mussels by human activity, construction, water-haul and recreational equipment, movement by fish and wildlife, movement via water flow, and other physical processes;

• Assess the likely movement patterns of boats that recently used the infested water body to identify risk and inspection needs at other water bodies;

• Establish inspection requirements and decontamination protocols for boats and equipment, and provide decontamination opportunity;

• Ensure that AIS "alert" signs are adequately deployed;

• Develop and implement Hazard Analysis and Critical Control Point plans to ensure that private and local, state, tribal or federal government response personnel do not further spread the original infestation;

• If possible, stop or slow water releases to potentially non-infested sites;
Note: Consider making water draws from below the thermocline; and

• Install physical barriers, if possible, to affect AIS movement (e.g. migration barriers to fish populations that harbor whirling disease, keeping them out of non-infested areas).

Control Plan Objective 8: Apply available, relevant and legally defendable eradication, control and/or containment actions and implement mitigation.

Strategy: The Incident Commander and the response team must evaluate management options for eradication, control and/or containment of the AIS, and then proceed, including implementation of suitable mitigation.

Task 1: Decide whether eradication, control and/or containment is possible based on rapid analysis of population dynamics, extent of distribution and analysis of vectors and pathways for AIS spread and available management options. Consider the following:

• Anticipated cost of eradication effort and follow-up monitoring relative to available funding;

• Type of water body (e.g. lake, main-stem reservoir, tributary reservoir, small stream, large river, wetland, or water diversion facility);

• Type of substrate (e.g., rocks that allow species attachment on their under sides where chemicals may not reach them);

• Extent of population distribution (isolated vs. widespread, coupled with *a priori* assumptions about the spread of the AIS before detection);

• AIS life stage(s) to be treated; and

• Volume of water in a lake, reservoir or waterway to be treated, considering the following:

1. Potential for the lake or reservoir to be drawn down or river flows to be reduced before treatment; and
2. Inflow sources, including springs, and potential to regulate that inflow.

• Assess circulation patterns in a water body as part of the treatment strategy;
• Determine known or potential spreading pattern of AIS population within the water body;
• Review known protocols for controlling and/or containing individual AIS species identified in Appendix A (documented August 2008);
• Review literature and consult experts for new or emerging methodology
• Assess treatment impacts and needed mitigation, particularly in regards to cultural resources, state protected or sensitive species, high valued habitats, federally listed threatened or endangered species or listed critical habitats; and
• Consider special status of affected water bodies as follows:

1. Water use designation (e.g. drinking water and other beneficial uses);
2. "Wild and Scenic" river designation;
3. Wilderness area designation;
4. Department of Defense or other restricted access areas;
5. Private, state, federal or tribal lands; and
6. Clean Water Act section 303(d) listing.

Task 2: Obtain relevant permits and regulatory agency support or concurrence for planned actions facilitating AIS eradication, control and/or containment methods, including agreed upon mitigation.
• Identify the lead contact within each regulatory agency who will facilitate permit approval, staying in touch until the permit or letter of authorization is issued;
Task 3: Implement appropriate eradication, control and/or containment methods using adaptive management approaches as appropriate.
Task 4: Consider funding research and development efforts to find new eradication, control and/or containment methods.
Task 5: Implement agreed upon mitigation.

Control Plan Objective 9: Institute Long-Term Monitoring.

Strategy: The Incident Commander and the response team must collect and document data from long-term monitoring of the AIS infestation, including the post treatment period.

Task 1: Design and conduct a project-specific and long-term monitoring program to evaluate the status of the AIS infestation. Include the post treatment period as it relates to effectiveness of treatment or non-treatment.
Note: Every monitoring project will be uniquely different in terms of AIS, location and sampling periodicity, although methodologies for biological monitoring of aquatic populations and aquatic habitats are relatively standardized.
• Monitoring of the AIS infestation can be carried out in coordination with other field operations, such as monitoring to meet permit or other regulatory

compliance resulting from eradication, control and/or containment actions or monitoring for mitigation effectiveness.

Task 2: Disseminate findings through an easily accessible, consolidated, coordinated real-time database and list serve (e.g. 100th Meridian Initiative's website).

Control Plan Objective 10: Evaluate response effectiveness, modify the Rapid Response Strategy as needed, and pursue long-term funding for AIS management.

Strategy: The Incident Commander and the response team, in order to allow for adaptive management by assuring feedback on the efficacy of response actions and the effectiveness of the Rapid Response Strategy, can enhance long-term preparedness for responses to other AIS introductions.

Task 1: Conduct a follow-up evaluation by response team organizations and other interest groups to identify opportunities for improving the Rapid Response Strategy. Disseminate "lessons learned" to other interested organizations (e.g. states, national Aquatic Nuisance Species Task Force, 100th Meridian Initiative, Regional Panels and River Basin teams).

Task 2: Revise the Rapid Response Strategy and associated documents/guidelines based on evaluation and long-term monitoring results.

Task 3: As resources allow, develop and implement an assessment that evaluates the associated ecological and economic impacts of the AIS invasion, the effectiveness of management interventions, and negative consequences of management interventions beyond that required by permits.

Task 4: Determine the need for long-term funding for the current AIS management effort, and seek this funding as warranted by meeting with state and federal legislators.